REMARKS

This responds to the Office Action mailed on May 16, 2006.

Claims 7-9, 11, 17, and 22 are amended, claims 1-6 and 12-16 are canceled, and claims are added; as a result, claims 7-11, and 17-25 are now pending in this application.

§102 Rejection of the Claims

Claims 1-2 were rejected under 35 USC § 102(e) as being anticipated by Lee et al.

Applicants canceled claims 1-2. but reserve the rights to re-file the canceled claims in a continuing application.

§103 Rejection of the Claims

Claims 3-25 were rejected under 35 USC § 103(a) as being unpatentable over Uang et al. in view of Lee et al. Applicants have canceled claims 3-6, and 12-16. However, Applicants reserve the rights to file those canceled claims in continuing applications.

Applicants respectfully traverse the rejection of the remaining claims for the reasons stated below..

To sustain a 35 USC § 103(a) rejection, each element of a rejected claim must be disclosed in the proposed combination of the cited documents as set forth in the Office Action.

Regarding to independent claim 7

First, the Office Action acknowledges that Uang et al fails to disclose a "heat sink".

Furthermore, Applicants have now amended claim 7 by adding a feature "both an upper surface of the die and a lower surface of the heat sink have metal coatings of gold." Neither Uang nor Lee teaches the added feature of claim 7, which is shown in FIG. 4 which illustrates an embodiment of the present application.

Moreover, the Office Action fails to mention any part of either Uang or Lee which teaches, individually, or as combined, an IC package having a first thermal intermediate portion and a second thermal intermediate portion. Such a feature , is now positively recited in claim 7,

> "a first thermal intermediate portion comprising a plurality of carbon nanotubes, some nanotubes of which have organic moieties attached to one end thereof, the one end of some nanotubes chemically bonded to the heat sink; and
> a second thermal intermediate portion comprising a plurality of carbon nanotubes, some nanotubes of which have organic moieties attached to one end thereof, the one end of some nanotubes chemically bonded to the die."

As to Uang, just as acknowledged by theOffice Action, the nanometer conductive bump of Uang has no heat sink, thus the bump of Uang has no thermal intermediate portion corresponding to "a first intermediate portion" of claim 7 of the present application.

As to Lee, the Offcie Action asserts that Lee discloses, in FIG. 2, an IC package comprising a die 223, heat sink 204, and a thermal intermediate structure 224 comprising a plurality of carbon nanotbues, some of which are 'tethered' to at least one of the die and the heat sink. However, FIG. 2 of Lee illustrates a thermal intermediate structure, having one ends of the nanotubes attached to the surface of the heat sink, and the other ends of these nanotubes attached to the surface of the die. Thus, it can be seen that such thermal intermediate structure of Lee is different from the thermal intermediate structure of claim 7, which is illustrated in FIG. 5 of the present invention.

Therefore, Applicants submit that, even if combined, the patents to Uang and Lee do not teach each of the elements recited in claim 7 of the present application. Thus, Applicants respectfully request the examiner to withdraw the rejection to claim 7 under 35 USC § 103(a) and to allow claim 7.

Regarding to independent claim 17

Applicant has amended claim 17. For at least the same reasons as discussed for claim 7, Applicants submit that, even if combined, the patents to Uang and Lee do not teach each of the elements recited in claim 17. Thus, Applicants respectfully request the examiner to withdraw the rejection to claim 17 under 35 USC § 103(a) and to allow claim 17.

Regarding to independent claim 22

Applicants amended claim 22 by adding a feature "oxidizing carbon nanotubes ropes in sulfuric and nitric acids, whereby the carbon nanotubes ropes are cut into a plurality of short carbon nanotubes with open ends having carboxyl linkages attached thereto."

Neither Uang nor Lee discloses the added oxidizing step. Thus, Applicants submit that, even if combined, the patents to Uang and Lee do not teach each of the elements recited in claim 22. Thus, Applicants respectfully request the examiner to withdraw the rejection to claim 22 under 35 USC § 103(a) and to allow claim 22.

Regarding to dependent claims 8-11, 18-21, and 23-25

Claims 8-11, 18-21, and 23-25, directly or indirectly, depend on independent claims 7, 17, and 22. Thus, for at least the same reasons discussed for claims 7, 17, and 22, Applicants submit that, even if combined, the patents to Uang and Lee do not teach each of the elements recited in claims 8-11, 18-21 and 23-25. Thus, Applicants respectfully request the examiner to withdraw the rejections to these dependent claims under 35 USC § 103(a) and to allow them.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney ((612) 373-6970) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 18th day of September 2006.

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